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CLAIMS

[Claim(s)]

[Claim 1]A digital broadcasting system broadcasting contents for viewing time measurement, measuring viewing time of a program by a televiewer in a digital broadcasting system which broadcasts program information with a digital gestalt using the contents concerned, and providing service according to said measuring time for the televiewer concerned.

[Claim 2]The digital broadcasting system according to claim 1 carrying out point conversion of said viewing time, and providing service according to a point size for a televiewer.

[Claim 3]A digital broadcasting method broadcasting contents for viewing time measurement, measuring viewing time of a program by a televiewer in a digital broadcasting method which broadcasts program information with a digital gestalt using the contents concerned, and providing service according to said measuring time for the televiewer concerned.

[Claim 4]The digital broadcasting method according to claim 3 carrying out point conversion of said viewing time, and providing service according to a point size for a televiewer.

[Claim 5]In a digital broadcasting system to broadcast, program information with a digital gestalt with said program information. A digital broadcasting station which broadcasts total contents which carry out the accumulation total of the viewing time using an event message which described lapsed time from an event broadcast last time, and the event message concerned with a digital gestalt, A reception means which receives said program information, an event message, and total contents, and measures viewing time of a program, A digital broadcasting system, wherein it has a service provision means which provides service according to said viewing time and said reception means is provided with a total contents recording means to record said total contents, and a memory measure which adds viewing time in which said total contents carried out the accumulation total, and is memorized.

[Claim 6]The digital broadcasting system according to claim 5 after said memory measure carries out point conversion of the viewing time, wherein it adds and memorizes it and it provides service according to a point size for a televiewer.

[Claim 7]The digital broadcasting system according to claim 5 or 6 using a multimedia coding mode which used XML as a base as said total contents.

[Claim 8]A digital broadcasting system which broadcasts program information with a digital gestalt, comprising:

A digital broadcasting station which broadcasts total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information with said program information with a digital gestalt.

A reception means which receives said program information and total contents, and measures viewing time of a program using total contents.

A total contents recording means by which it has a service provision means which provides service according to said viewing time, and said reception means records said total contents.

A memory measure which adds viewing time which carried out the accumulation total using said total contents, and is memorized.

[Claim 9]The digital broadcasting system according to claim 8 after said memory measure carries

out point conversion of the viewing time, wherein it adds and memorizes it and it provides service according to a point size for a televiewer.

[Claim 10]The digital broadcasting system according to claim 8 or 9 using a multimedia coding mode which used XML as a base as said total contents.

[Claim 11]A viewing-and-listening start step which views and listens to a program in a digital broadcasting method which broadcasts program information with a digital gestalt, An event message subscription step which subscribes to an event message which described lapsed time from an event broadcast last time, A digital broadcasting method which carries out the accumulation total of the viewing time using said event message, and is characterized by having an accumulation step which adds viewing time which carried out the accumulation total, and is stored, and a point use step which provides service according to stored viewing time for a televiewer.

[Claim 12]The digital broadcasting method according to claim 11 adding and memorizing and providing service according to a point size for a televiewer after carrying out point conversion of said viewing time.

[Claim 13]The digital broadcasting method according to claim 11 or 12 performing said point accumulation step using a multimedia coding mode which used XML as a base.

[Claim 14]A viewing-and-listening start step which views and listens to a program in a digital broadcasting method which broadcasts program information with a digital gestalt, A step which receives total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information, A digital broadcasting method which carries out the accumulation total of the viewing time using said total contents, and is characterized by having an accumulation step which adds viewing time which carried out the accumulation total, and is stored, and a point use step which provides service according to stored viewing time for a televiewer.

[Claim 15]The digital broadcasting method according to claim 14 adding and memorizing and providing service according to a point size for a televiewer after carrying out point conversion of said viewing time.

[Claim 16]The digital broadcasting method according to claim 14 or 15 performing said point accumulation step using a multimedia coding mode which used XML as a base.

[Claim 17]In a broadcast sending device to broadcast, program information with a digital gestalt with said program information. A broadcast sending device broadcasting total contents which carry out the accumulation total of the viewing time using an event message which described lapsed time from an event broadcast last time, and the event message concerned with a digital gestalt.

[Claim 18]A broadcast sending device broadcasting total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information with said program information with a digital gestalt in a broadcast sending device which broadcasts program information with a digital gestalt.

[Claim 19]In a broadcast receiving set to receive, program information of a digital gestalt with said program information. A means to receive total contents which carry out the accumulation total of the viewing time of a program using an event message which described lapsed time from an event broadcast last time, and the event message concerned, A broadcast receiving set provided with a means to carry out the accumulation total of the viewing time of a program using said event message, and to add viewing time which carried out the accumulation total, and to store.

[Claim 20]The broadcast receiving set according to claim 19 provided with a memory measure which memorizes a viewing history of said program.

[Claim 21]A broadcast receiving set which receives program information of a digital gestalt, comprising:

A means to receive total contents which carry out the accumulation total of the viewing time of a program with reference to lapsed time from a reception time of program information with said program information.

A means to carry out the accumulation total of the viewing time of a program using said total

contents, and to add viewing time which carried out the accumulation total, and to store.

[Claim 22]The broadcast receiving set according to claim 21 provided with a memory measure which memorizes a viewing history of said program.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The digital broadcasting system which broadcasts the program information which comprises information, including an image, a sound, a character, etc., with a digital gestalt via the transmission line where this invention contains a terrestrial wave and a satellite (BS) wave, About a digital broadcasting method, a broadcast sending-out sending device, and a broadcast receiving set, especially, The art which promotes the spread of digital broadcasting services substantially is started by broadcasting the contents for viewing time measurement and providing measurement and the service according to viewing time of the viewing time of the program by a televiewer for a televiewer using these contents.

[0002]

[Description of the Prior Art]Although it adds to the analog broadcasting which has generally these days already spread and the infrastructure concerning the digital broadcasting which broadcasts the program information which comprises information, including an image, a sound, a character, etc., with a digital gestalt is being quickly improved via the transmission line containing a terrestrial wave and a satellite wave, It is said that it only digitizes program information and the important point which should be taken into consideration when such digital broadcasting establishes the status as future very attractive service not only broadcasts it, but is to return [how] what is called "a dividend of digitization" to a televiewer.

[0003]

[Problem(s) to be Solved by the Invention]However, it is most which is aiming at solution with the approach from the side technical about the place by the present, and this "dividend of digitization", The actual condition is that are not yet proposed and what tries to aim at solution by the approach from the service side which fully took into consideration the position by the side of a televiewer is not realized.

[0004]In order to spread digital broadcasting more than the analog broadcasting average or it from now on, it is certain that it is pressing need to realize "a dividend of digitization" with the approach from the service side.

[0005]this invention is made in view of the above problems, and comes out. The purpose is to provide the digital broadcasting system and digital broadcasting method which promote the spread of services substantially.

[0006]

[Means for Solving the Problem]In solving the above-mentioned problem, artificers, A digital-data-transmission standard based on ARIB STD-B24 (a data-broadcasting coding mode and a transmission system in digital broadcasting) is used, Broadcast contents for viewing time measurement and viewing time of a program by a televiewer is measured using these contents, According to viewing time, point use through premium exchange or an electronic network, etc. by providing various services for a televiewer, As a result of resulting in an idea of becoming possible to promote the spread of digital broadcasting services substantially and having continued energetic research, it came to suggest technical idea provided with the following

features.

[0007]In a digital broadcasting system to broadcast, the 1st feature of this invention program information with a digital gestalt with program information. A digital broadcasting station which broadcasts total contents which carry out the accumulation total of the viewing time using an event message and an event message which described lapsed time from an event broadcast last time with a digital gestalt, A reception means which receives program information, an event message, and total contents, and point-izes viewing time of a program, It has a service provision means which provides service according to a point, and there is a reception means in being a digital broadcasting system provided with a total contents recording means to record total contents, and a memory measure which adds viewing time in which total contents carried out the accumulation total, and is memorized.

[0008]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, it becomes possible to promote the spread of digital broadcasting services substantially.

[0009]In a digital broadcasting system to broadcast, the 2nd feature of this invention program information with a digital gestalt with program information. A digital broadcasting station which broadcasts total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information with a digital gestalt, Receive program information and total contents, have a reception means which point-izes viewing time of a program, and a service provision means which provides service according to a point, and a reception means, It is in being a digital broadcasting system provided with a total contents recording means to record total contents, and a memory measure which total contents add viewing time which carried out the accumulation total, and memorize.

[0010]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, it becomes possible to promote the spread of digital broadcasting services substantially.

[0011]In a digital broadcasting method with which the 3rd feature of this invention broadcasts program information with a digital gestalt, A viewing-and-listening start step which views and listens to a program, and an event message subscription step which subscribes to an event message which described lapsed time from an event broadcast last time, The accumulation total of the viewing time is carried out using an event message, and it is in being a digital broadcasting method which has an accumulation step which adds viewing time which carried out the accumulation total, and is stored, and a point use step which provides service according to stored viewing time for a televiewer.

[0012]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, he can promote the spread of digital broadcasting services substantially.

[0013]In a digital broadcasting method with which the 4th feature of this invention broadcasts program information with a digital gestalt, A viewing-and-listening start step which views and listens to a program, and a step which receives total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information, The accumulation total of the viewing time is carried out using total contents, and it is in being a digital broadcasting method which has an accumulation step which adds viewing time which carried out the accumulation total, and is stored, and a point use step which provides service according to stored viewing time for a televiewer.

[0014]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, he can promote the spread of digital broadcasting services substantially.

[0015]In a broadcast sending device to broadcast, the 5th feature of this invention program information with a digital gestalt with program information. It is in being a broadcast sending device which broadcasts total contents which carry out the accumulation total of the viewing time of a program using an event message and an event message which described lapsed time from an event broadcast last time with a digital gestalt.

[0016]This becomes possible to measure viewing time of a program by a televiewer easily.

[0017]In a broadcast sending device which broadcasts program information with a digital gestalt, there is the 6th feature of this invention in being a broadcast sending device which broadcasts

total contents which carry out the accumulation total of the viewing time of a program with reference to lapsed time from a reception time of program information with program information with a digital gestalt.

[0018]This becomes possible to measure viewing time of a program by a televiewer easily.

[0019]In a broadcast receiving set to receive, the 7th feature of this invention program information of a digital gestalt with program information. A means to receive total contents which carry out the accumulation total of the viewing time of a program using an event message which described lapsed time from an event broadcast last time, and the event message concerned, It is in being a broadcast receiving set provided with a means to carry out the accumulation total of the viewing time of a program using an event message, and to add viewing time which carried out the accumulation total, and to store.

[0020]This becomes possible to measure viewing time of a program by a televiewer easily and correctly.

[0021]In a broadcast receiving set to receive, the 8th feature of this invention program information of a digital gestalt with program information. It is in being a broadcast receiving set provided with a means to receive total contents which carry out the accumulation total of the viewing time of a program with reference to lapsed time from a reception time of program information, and a means to carry out the accumulation total of the viewing time of a program using total contents, and to add viewing time which carried out the accumulation total, and to store.

[0022]This becomes possible to measure viewing time of a program by a televiewer easily and correctly.

[0023]Point conversion of the viewing time is carried out, and it may be made to provide service according to a point size for a televiewer here.

[0024]It is desirable to use a multimedia coding mode which used as a base XML containing BML contents as total contents.

[0025]

[Embodiment of the Invention]As stated so far, the feature of this invention is in what "the contents for viewing time measurement are broadcast and the various services [viewing time / of the program by a televiewer] according to measurement and viewing time are provided for a televiewer for using these contents." Below, the composition and the operation of a digital broadcasting system, a digital broadcasting method, a broadcast sending device, and a broadcast receiving set concerning the embodiment of this invention which embodied this feature are explained in detail with reference to drawing 1 thru/or drawing 8.

[0026](Digital broadcasting system) First with reference to drawing 1, the composition of the digital broadcasting system concerning the embodiment of this invention is explained.

[0027]The digital broadcasting system 100 concerning the embodiment of this invention, Program information, total contents which comprise information, including an image, a sound, a character, etc., The digital information from the digital broadcasting station (broadcast sending device) 101 and the digital broadcasting station 101 which broadcasts data broadcasting containing an event message with a digital gestalt is received, The reception means (broadcast receiving set) 102 which views and listens and point-izes viewing time of a program, a televiewer's point size, etc., By the server 104 for television (TV) members and the server 105 for net members, and point which support various processing for the database 103 and televiewer who store the information about a televiewer to use various services. It comprises the service provision server 106 which provides service of an available game etc., and the computer system 107 which receives offer of service, and these components can be mutually connected via an electronic network.

[0028]The reception means 102 concerning the embodiment of this invention, The detection / decoding means 102a which detects the digital information from the digital broadcasting station 101, and is decoded, A registration means 102e to hold membership registration for using the interpretation means 102b and point which interpret the decoded digital information, Provide the output means 102f which outputs the interpreted digital information to a televiewer, and the interpretation means 102b, A total contents recording means 102c to record the total contents which carry out the accumulation total of the viewing time using the sent-out event message

from the digital broadcasting station 101, Total contents are provided with the point storage means 102d added and memorized by considering viewing time which carried out the accumulation total as the point at least.

[0029]Here, the lapsed time from the event sent out last time shall be described by the minute unit from the digital broadcasting station 101 by the event message emitted, and an event message shall be broadcast at random in a program. In employing the general-purpose event message based on the digital-data-transmission standard based on ARIB STD-B24, For example, event_msg_id used in order to measure viewing time is good to store the data of the following which carried out fixed employment and was coded by [EUC-jp] in private_data_byte.

[0030]

- The integral value of double figures which shows add_value 16bit lapsed time, and the digital information broadcast from the digital broadcasting station 101, It is desirable to use the digital-data-transmission standard based on ARIB STD-B24, and in this case as total contents, It is desirable to use the multimedia coding mode which used XML as the base, and, specifically, use of BML (Broadcasting Markup Language) contents can be considered.

[0031]It is desirable to use the field only for an entrepreneur as the point storage means 102d among the nonvolatile memory (for example, semiconductor memory etc.) contained in IRD (Integrated Receiver& Decoder). An entrepreneur becomes possible [totaling the viewership for every program which self broadcast using the information saved in the field] by assigning a dedicated area for every entrepreneur in the memory area only for an entrepreneur.

[0032]A means to receive offer of service may receive offer of service via a portable information terminal further again, for example, without being restricted to the computer system 107.

[0033]When saving the program information broadcast for some televiewers at memory storage, such as a memory, and viewing and listening to a program after that, are, but. In the digital broadcasting system of this invention, since data broadcasting is broadcast with program information, even if it is such a case, it is possible to calculate viewing time correctly.

[0034]A "program" here shall mean the information which comprises a volume on program book, and commercials (CM).

[0035]With an "electronic network" here. The Internet system which meant the communications network at large [using an electric communication technic], for example, used TCP (Transmission Control Protocol)/IP (InternetProtocol) as the base, Use of WAN (Wide AreaNetwork), LAN (Local Area Network), fiber-optic communications, cable communication, satellite communication, etc. can be considered.

[0036](Digital broadcasting method) Next, with reference to drawing 2, the digital broadcasting method concerning the embodiment of this invention is explained.

[0037]When performing digital broadcasting processing using the digital broadcasting method concerning the embodiment of this invention, the following processing steps are performed.

[0038](1) A user views and listens to the program information and data broadcasting which the digital broadcasting station 101 broadcasts via the reception means 102 (a viewing-and-listening start step, S201).

[0039](2) The reception means 102 subscribes to the event message sent out from a digital broadcasting station (an event message subscription step, S202).

[0040](3) The reception means 102 records the total contents in data broadcasting in the total contents recording means 102c, Total contents carry out the accumulation total of the viewing time using an event message, convert into the point the viewing time which carried out the accumulation total, and add and store in the point storage means 102d (a point accumulation step, S203).

[0041]Here, as for viewing time, it is desirable to add, whenever a televiewer views and listens to the commercials (CM) inserted between the volumes on program book.

[0042]Then, when receiving offer of service using a point, it shifts to (a point cash-drawer step and S205), and when not receiving offer of service, digital broadcasting processing is ended.

[0043](4) Pull out the point which self holds via an electronic network from the database 103 via the server 104 for TV members, and the server 105 for net members (a point drawer step, S205).

[0044]Here for the drawer of a point, and use, A televiewer beforehand The identification number (ID) of IRD, a family identification number, a membership number, It is desirable to register viewer information, such as a password, a name, an address, and the present point size, into the database 103 via the servers 104 and 105, and membership registration, For example, it is good to carry out by accessing the servers 104 and 105 via an electronic network, starting drawing 5 and a membership registration screen as shown in 6, and inputting predetermined information.

[0045](5) Receive offer of the service according to the pulled-out point size (a point use step, S206).

[0046]Here, it is possible to make it possible to exchange the premium corresponding to the point size and point size which the televiewer pulled out by accessing the servers 104 and 105 via an electronic network as one of the services provided for a televiewer. It may make it possible to use contents, such as a game developed on the Internet using a point — the point which accessed the service provision server 106 and was pulled out receives offer of service as other services, for example.

[0047](6) With reference to the point size which the televiewer used for service provision, the servers 104 and 105 update the point size of the televiewer in the database 103, and end digital broadcasting processing (a point value renewal step, S207).

[0048]Then, with reference to drawing 3 thru/or drawing 4, it divides into the digital broadcasting station 101 and reception means 102 side, and, below, the digital broadcasting processing concerning the embodiment of this invention is explained.

[0049](The broadcasting station side processing)

(1) Manufacture the total contents which carry out the accumulation total of the viewing time using an event message (a total contents manufacture step, S301).

[0050](2) Generate the event message used in order to carry out the accumulation total of the viewing time (an event message generation step, S303).

[0051](3) By difference computation with the generating time of the last event message that acquires the time which generated the event message from time measurement means, such as time counting (S304), and is memorized in the predetermined storage area. The generating time interval between the event message generated this time and the event message generated last time is extracted (difference calculation steps, S306). The generating time of the event message generated this time is overwritten after time interval extraction in a predetermined storage area (S308), and generating time is memorized (S305).

[0052](4) Write in the time interval extracted in the difference calculation steps S306 in the event message (a write-in step, S307).

[0053](5) Broadcast an event message (a message broadcast step, S309).

[0054]As for total contents, it is desirable not only the existence of viewing and listening of digital broadcasting but to always broadcast. On the other hand, an event message is good to, broadcast the time of the commercial broadcast within a program, etc. at random for example.

[0055](Receiver processing)

(1) Receive the total contents which the broadcasting station 101 broadcasts (a total content reception step, S401).

[0056](2) Start total contents (a total contents starting step, S402), and improve the measuring process environment of viewing time.

[0057](3) Start the measuring process of viewing time with reception of the event message which the broadcasting station 101 broadcasts (S404) (an event message processing start step, S403).

[0058](4) Overwrite the value which added the time interval in an event message to read-out from a predetermined storage parts store, and this accumulated time, and added the accumulated time of the viewing time to last time to them in a predetermined storage parts store (a summing processing (I) step, S405).

[0059]When using the storage area (NVRAM) only for an entrepreneur as a storage parts store among the nonvolatile memory contained in IRD, it is good to memorize and employ the information which starts viewing time by following block assignment and block arrangement (refer to drawing 7).

[0060]0:representative nvram: [quota -nvram://broadcasrt_id/]//broadcasrt_id/1 which is - NVRAMblock: Nickname (1)
 nvram://broadcasrt_id/2: Nickname (2)
 nvram://broadcasrt_id/3: Nickname (3)
 nvram://broadcasrt_id/4: Nickname (4)
 arrangement quota -nvram: - within a block. //broadcasrt_id/N[1]:broadcasrt_id/N[capacity 12bytenvram/ which memorizes a membership number /:/] [2]: — the capacity 14bytenvram://broadcasrt_id/N[3]:temporary member who memorizes nickname, and a television member. Capacity 1bytenvram://broadcasrt_id/N [4] which memorizes the classification of members, such as a net member, a portable member, and a platina member,: Memorize a member's date of birth (YYYYMMDD).
 Capacity 8bytenvram://broadcasrt_id/N [5]: Memorize a member's sex (M: a male, F:woman).
 capacity 1bytenvram://broadcasrt_id/N[6]:broadcasrt_id/N[capacity 4bytenvram/ which memorizes a point size /:/] [7]: — the last update date of a point size is memorized (YYMMDD)

Capacity 6bytenvram://broadcasrt_id/N [8]: Memorize the family number of common NVRAM (1-8).

Capacity 1bytenvram://broadcasrt_id/N [9]: Memorize a withdrawal-from-the-membership flag (under 0:admission, 1: withdrawal from the membership).

□ of still the above [capacity of 1 byte] — an inner number shall show the ordinal number of arrangement A savings point size means the point size which the user saved in the database 103 via the electronic network.

[0061](5) Add the point size equivalent to the time interval to which an event message holds the accumulation point size to last time in read-out from a predetermined storage parts store, and an accumulation point size, and write in the added point size in a predetermined storage parts store (a summing processing (II) step, S406).

[0062]It is desirable to provide the storage parts store which memorizes here the updated date of a point size other than the storage parts store which memorizes a point size, and to also memorize an updated date with renewal of a point size.

[0063](6) Acquire the event_id information which shows the contents of the program (an event_id acquisition step, S407). As a result of acquiring, when event_id information is the same as that of the last thing, to (an event message processing start step and S403) in not being the same, After adding the event_id information acquired to the predetermined storage area (S409), it shifts to (an event message processing start step and S403), respectively.

[0064]So far, although stated focusing on the service to a televiewer, By enabling the digital broadcasting station 101 and the service provision server 106 to refer to the membership information in the database 101 via an electronic network, Since information, including a televiewer's viewing history (view log) etc., can be extracted, there is a big merit also in the side which provides service — useful information is collectable to organization of a program — for example. Since the televiewer can enjoy much more service if it is made to provide additional service of discount of paid broadcasting, etc. for a televiewer based on the extracted information, it becomes possible to spread digital broadcasting further.

[0065]To what is called information processors, such as a server used within the digital broadcasting system concerning the embodiment of this invention, and a computer system. It has a general view like composition of a general aviation, a workstation, PC, NC (Network Computer), etc. being included, for example, being shown in drawing 8, and it is assumed that it has the floppy (registered trademark) disk drive 82 and the optical disk drive 84. And by inserting the optical disc 86 to the floppy disk 83 and the optical disk drive 84 to the floppy disk drive 82, and performing predetermined read-out operation, The information stored in these recording media is installable in the computer system 80. It is also possible by connecting a predetermined drive device to perform installation and reading and writing of data using the cartridge 88 which plays ROM87 which plays a role of a storage device, and a role of a magnetic tape handler, for example. Information, including membership information etc., can be inputted via the keyboard 85, and the service etc. which are provided can also be outputted from the display 81.

[0066]The digital broadcasting method of this invention may be programmed and may be saved at the recording medium in which computer reading is possible. And by making this recording medium read into a computer system, storing a program in storage parts stores, such as a memory within a computer system, and executing a digital broadcasting program with an arithmetic unit, when performing digital broadcasting processing, The digital broadcasting method of this invention is realized and it also becomes possible to automate. Here, with a recording medium, a recording medium etc. which can record the program of semiconductor memory, a magnetic disk, an optical disc, a magneto-optical disc, magnetic tape, etc. and in which computer reading is possible are contained, for example.

[0067]<<Other embodiments>> In the above-mentioned embodiment, although it has composition which is a distribution side (broadcasting station) of program information, integrates the viewing time of a program and transmits to a receiving set, it does not matter at all even if it performs this addition processing by the receiving set side. Namely, transmit and the total contents which carry out the accumulation total of the viewing time of a program with program information with reference to the lapsed time from the reception time of program information as shown, for example in drawing 9 by the receiving set side. Only a predetermined number may be made to ***** the point size within a point storage means with a predetermined time interval using these total contents (description A in drawing 9).

[0068]The point size memorized in the point storage means is good to enable it to reset by processing by the side of a broadcasting station. The reset processing of this point size is realizable by starting a function as shown in drawing 10, and making it always operate at the time of the start-up of BML contents. According to this composition, it becomes possible to perform processing in which a point size is reset annually, for example.

[0069]Thus, including the various embodiment etc. which have not been indicated here should fully understand this invention. Therefore, this invention must be limited from this indication by only matter to define the invention concerning appropriate Claims.

[0070]

[Effect of the Invention]Since it becomes possible to provide measurement with the viewing time of the program by a televiewer, to point-size and to provide the service according to a point size for a televiewer according to the digital broadcasting system and digital broadcasting method of this invention as stated above, It becomes possible to promote the spread of digital broadcasting services substantially.

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TECHNICAL FIELD

[Field of the Invention]The digital broadcasting system which broadcasts the program information which comprises information, including an image, a sound, a character, etc., with a digital gestalt via the transmission line where this invention contains a terrestrial wave and a satellite (BS) wave, About a digital broadcasting method, a broadcast sending-out sending device, and a broadcast receiving set, especially, The art which promotes the spread of digital broadcasting services substantially is started by broadcasting the contents for viewing time measurement and providing measurement and the service according to viewing time of the viewing time of the program by a televiewer for a televiewer using these contents.

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PRIOR ART

[Description of the Prior Art]Although it adds to the analog broadcasting which has generally these days already spread and the infrastructure concerning the digital broadcasting which broadcasts the program information which comprises information, including an image, a sound, a character, etc., with a digital gestalt is being quickly improved via the transmission line containing a terrestrial wave and a satellite wave, It is said that it only digitizes program information and the important point which should be taken into consideration when such digital broadcasting establishes the status as future very attractive service not only broadcasts it, but is to return [how] what is called "a dividend of digitization" to a televiewer.

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EFFECT OF THE INVENTION

[Effect of the Invention]Since it becomes possible to provide measurement with the viewing time of the program by a televiewer, to point-ize and to provide the service according to a point size for a televiewer according to the digital broadcasting system and digital broadcasting method of this invention as stated above, It becomes possible to promote the spread of digital broadcasting services substantially.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]However, it is most which is aiming at solution with the approach from the side technical about the place by the present, and this "dividend of digitization", The actual condition is that are not yet proposed and what tries to aim at solution by the approach from the service side which fully took into consideration the position by the side of a televiewer is not realized.

[0004]In order to spread digital broadcasting more than the analog broadcasting average or it from now on, it is certain that it is pressing need to realize "a dividend of digitization" with the approach from the service side.

[0005]this invention is made in view of the above problems, and comes out. The purpose is to provide the digital broadcasting system and digital broadcasting method which promote the spread of services substantially.

[Translation done.]

* NOTICES *

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem]In solving the above-mentioned problem, artificers, A digital-data-transmission standard based on ARIB STD-B24 (a data-broadcasting coding mode and a transmission system in digital broadcasting) is used, Broadcast contents for viewing time measurement and viewing time of a program by a televiewer is measured using these contents, According to viewing time, point use through premium exchange or an electronic network, etc. by providing various services for a televiewer, As a result of resulting in an idea of becoming possible to promote the spread of digital broadcasting services substantially and having continued energetic research, it came to suggest technical idea provided with the following features.

[0007]In a digital broadcasting system to broadcast, the 1st feature of this invention program information with a digital gestalt with program information. A digital broadcasting station which broadcasts total contents which carry out the accumulation total of the viewing time using an event message and an event message which described lapsed time from an event broadcast last time with a digital gestalt, A reception means which receives program information, an event message, and total contents, and point-izes viewing time of a program, It has a service provision means which provides service according to a point, and there is a reception means in being a digital broadcasting system provided with a total contents recording means to record total contents, and a memory measure which adds viewing time in which total contents carried out the accumulation total, and is memorized.

[0008]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, it becomes possible to promote the spread of digital broadcasting services substantially.

[0009]In a digital broadcasting system to broadcast, the 2nd feature of this invention program information with a digital gestalt with program information. A digital broadcasting station which broadcasts total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information with a digital gestalt, Receive program information and total contents, have a reception means which point-izes viewing time of a program, and a service provision means which provides service according to a point, and a reception means, It is in being a digital broadcasting system provided with a total contents recording means to record total contents, and a memory measure which total contents add viewing time which carried out the accumulation total, and memorize.

[0010]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, it becomes possible to promote the spread of digital broadcasting services substantially.

[0011]In a digital broadcasting method with which the 3rd feature of this invention broadcasts program information with a digital gestalt, A viewing-and-listening start step which views and listens to a program, and an event message subscription step which subscribes to an event message which described lapsed time from an event broadcast last time, The accumulation total of the viewing time is carried out using an event message, and it is in being a digital broadcasting method which has an accumulation step which adds viewing time which carried out the accumulation total, and is stored, and a point use step which provides service according to

stored viewing time for a televiewer.

[0012]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, he can promote the spread of digital broadcasting services substantially.

[0013]In a digital broadcasting method with which the 4th feature of this invention broadcasts program information with a digital gestalt, A viewing-and-listening start step which views and listens to a program, and a step which receives total contents which carry out the accumulation total of the viewing time with reference to lapsed time from a reception time of program information, The accumulation total of the viewing time is carried out using total contents, and it is in being a digital broadcasting method which has an accumulation step which adds viewing time which carried out the accumulation total, and is stored, and a point use step which provides service according to stored viewing time for a televiewer.

[0014]Thereby, since the televiewer can enjoy additional service with viewing and listening of digital broadcasting, he can promote the spread of digital broadcasting services substantially.

[0015]In a broadcast sending device to broadcast, the 5th feature of this invention program information with a digital gestalt with program information. It is in being a broadcast sending device which broadcasts total contents which carry out the accumulation total of the viewing time of a program using an event message and an event message which described lapsed time from an event broadcast last time with a digital gestalt.

[0016]This becomes possible to measure viewing time of a program by a televiewer easily.

[0017]In a broadcast sending device which broadcasts program information with a digital gestalt, there is the 6th feature of this invention in being a broadcast sending device which broadcasts total contents which carry out the accumulation total of the viewing time of a program with reference to lapsed time from a reception time of program information with program information with a digital gestalt.

[0018]This becomes possible to measure viewing time of a program by a televiewer easily.

[0019]In a broadcast receiving set to receive, the 7th feature of this invention program information of a digital gestalt with program information. A means to receive total contents which carry out the accumulation total of the viewing time of a program using an event message which described lapsed time from an event broadcast last time, and the event message concerned, It is in being a broadcast receiving set provided with a means to carry out the accumulation total of the viewing time of a program using an event message, and to add viewing time which carried out the accumulation total, and to store.

[0020]This becomes possible to measure viewing time of a program by a televiewer easily and correctly.

[0021]In a broadcast receiving set to receive, the 8th feature of this invention program information of a digital gestalt with program information. It is in being a broadcast receiving set provided with a means to receive total contents which carry out the accumulation total of the viewing time of a program with reference to lapsed time from a reception time of program information, and a means to carry out the accumulation total of the viewing time of a program using total contents, and to add viewing time which carried out the accumulation total, and to store.

[0022]This becomes possible to measure viewing time of a program by a televiewer easily and correctly.

[0023]Point conversion of the viewing time is carried out, and it may be made to provide service according to a point size for a televiewer here.

[0024]It is desirable to use a multimedia coding mode which used as a base XML containing BML contents as total contents.

[0025]

[Embodiment of the Invention]As stated so far, the feature of this invention is in what "the contents for viewing time measurement are broadcast and the various services [viewing time / of the program by a televiewer] according to measurement and viewing time are provided for a televiewer for using these contents." Below, the composition and the operation of a digital broadcasting system, a digital broadcasting method, a broadcast sending device, and a broadcast receiving set concerning the embodiment of this invention which embodied this feature are

explained in detail with reference to drawing 1 thru/or drawing 8.

[0026](Digital broadcasting system) First with reference to drawing 1, the composition of the digital broadcasting system concerning the embodiment of this invention is explained.

[0027]The digital broadcasting system 100 concerning the embodiment of this invention, Program information, total contents which comprise information, including an image, a sound, a character, etc., The digital information from the digital broadcasting station (broadcast sending device) 101 and the digital broadcasting station 101 which broadcasts data broadcasting containing an event message with a digital gestalt is received, The reception means (broadcast receiving set) 102 which views and listens and point-izes viewing time of a program, a televiewer's point size, etc., By the server 104 for television (TV) members and the server 105 for net members, and point which support various processing for the database 103 and televiewer who store the information about a televiewer to use various services. It comprises the service provision server 106 which provides service of an available game etc., and the computer system 107 which receives offer of service, and these components can be mutually connected via an electronic network.

[0028]The reception means 102 concerning the embodiment of this invention, The detection / decoding means 102a which detects the digital information from the digital broadcasting station 101, and is decoded, A registration means 102e to hold membership registration for using the interpretation means 102b and point which interpret the decoded digital information, Provide the output means 102f which outputs the interpreted digital information to a televiewer, and the interpretation means 102b, A total contents recording means 102c to record the total contents which carry out the accumulation total of the viewing time using the sent-out event message from the digital broadcasting station 101, Total contents are provided with the point storage means 102d added and memorized by considering viewing time which carried out the accumulation total as the point at least.

[0029]Here, the lapsed time from the event sent out last time shall be described by the minute unit from the digital broadcasting station 101 by the event message emitted, and an event message shall be broadcast at random in a program. In employing the general-purpose event message based on the digital-data-transmission standard based on ARIB STD-B24, For example, event_msg_id used in order to measure viewing time is good to store the data of the following which carried out fixed employment and was coded by [EUC-jp] in private_data_byte.

[0030]

- The integral value of double figures which shows add_value 16bit lapsed time, and the digital information broadcast from the digital broadcasting station 101, It is desirable to use the digital-data-transmission standard based on ARIB STD-B24, and in this case as total contents, It is desirable to use the multimedia coding mode which used XML as the base, and, specifically, use of BML (Broadcasting Markup Language) contents can be considered.

[0031]It is desirable to use the field only for an entrepreneur as the point storage means 102d among the nonvolatile memory (for example, semiconductor memory etc.) contained in IRD (Integrated Receiver& Decoder). An entrepreneur becomes possible [totaling the viewership for every program which self broadcast using the information saved in the field] by assigning a dedicated area for every entrepreneur in the memory area only for an entrepreneur.

[0032]A means to receive offer of service may receive offer of service via a portable information terminal further again, for example, without being restricted to the computer system 107.

[0033]When saving the program information broadcast for some televiewers at memory storage, such as a memory, and viewing and listening to a program after that, are, but. In the digital broadcasting system of this invention, since data broadcasting is broadcast with program information, even if it is such a case, it is possible to calculate viewing time correctly.

[0034]A "program" here shall mean the information which comprises a volume on program book, and commercials (CM).

[0035]With an "electronic network" here. The Internet system which meant the communications network at large [using an electric communication technic], for example, used TCP (Transmission Control Protocol)/IP (InternetProtocol) as the base, Use of WAN (Wide AreaNetwork), LAN (Local Area Network), fiber-optic communications, cable communication, satellite communication, etc. can be considered.

[0036](Digital broadcasting method) Next, with reference to drawing 2, the digital broadcasting method concerning the embodiment of this invention is explained.

[0037]When performing digital broadcasting processing using the digital broadcasting method concerning the embodiment of this invention, the following processing steps are performed.

[0038](1) A user views and listens to the program information and data broadcasting which the digital broadcasting station 101 broadcasts via the reception means 102 (a viewing-and-listening start step, S201).

[0039](2) The reception means 102 subscribes to the event message sent out from a digital broadcasting station (an event message subscription step, S202).

[0040](3) The reception means 102 records the total contents in data broadcasting in the total contents recording means 102c, Total contents carry out the accumulation total of the viewing time using an event message, convert into the point the viewing time which carried out the accumulation total, and add and store in the point storage means 102d (a point accumulation step, S203).

[0041]Here, as for viewing time, it is desirable to add, whenever a televiewer views and listens to the commercials (CM) inserted between the volumes on program book.

[0042]Then, when receiving offer of service using a point, it shifts to (a point cash-drawer step and S205), and when not receiving offer of service, digital broadcasting processing is ended.

[0043](4) Pull out the point which self holds via an electronic network from the database 103 via the server 104 for TV members, and the server 105 for net members (a point drawer step, S205).

[0044]Here for the drawer of a point, and use, A televiewer beforehand The identification number (ID) of IRD, a family identification number, a membership number, It is desirable to register viewer information, such as a password, a name, an address, and the present point size, into the database 103 via the servers 104 and 105, and membership registration, For example, it is good to carry out by accessing the servers 104 and 105 via an electronic network, starting drawing 5 and a membership registration screen as shown in 6, and inputting predetermined information.

[0045](5) Receive offer of the service according to the pulled-out point size (a point use step, S206).

[0046]Here, it is possible to make it possible to exchange the premium corresponding to the point size and point size which the televiewer pulled out by accessing the servers 104 and 105 via an electronic network as one of the services provided for a televiewer. It may make it possible to use contents, such as a game developed on the Internet using a point -- the point which accessed the service provision server 106 and was pulled out receives offer of service as other services, for example.

[0047](6) With reference to the point size which the televiewer used for service provision, the servers 104 and 105 update the point size of the televiewer in the database 103, and end digital broadcasting processing (a point value renewal step, S207).

[0048]Then, with reference to drawing 3 thru/or drawing 4, it divides into the digital broadcasting station 101 and reception means 102 side, and, below, the digital broadcasting processing concerning the embodiment of this invention is explained.

[0049](The broadcasting station side processing)

(1) Manufacture the total contents which carry out the accumulation total of the viewing time using an event message (a total contents manufacture step, S301).

[0050](2) Generate the event message used in order to carry out the accumulation total of the viewing time (an event message generation step, S303).

[0051](3) By difference computation with the generating time of the last event message that acquires the time which generated the event message from time measurement means, such as time counting (S304), and is memorized in the predetermined storage area. The generating time interval between the event message generated this time and the event message generated last time is extracted (difference calculation steps, S306). The generating time of the event message generated this time is overwritten after time interval extraction in a predetermined storage area (S308), and generating time is memorized (S305).

[0052](4) Write in the time interval extracted in the difference calculation steps S306 in the

event message (a write-in step, S307).

[0053](5) Broadcast an event message (a message broadcast step, S309).

[0054]As for total contents, it is desirable not only the existence of viewing and listening of digital broadcasting but to always broadcast. On the other hand, an event message is good to, broadcast the time of the commercial broadcast within a program, etc. at random for example.

[0055](Receiver processing)

(1) Receive the total contents which the broadcasting station 101 broadcasts (a total content reception step, S401).

[0056](2) Start total contents (a total contents starting step, S402), and improve the measuring process environment of viewing time.

[0057](3) Start the measuring process of viewing time with reception of the event message which the broadcasting station 101 broadcasts (S404) (an event message processing start step, S403).

[0058](4) Overwrite the value which added the time interval in an event message to read-out from a predetermined storage parts store, and this accumulated time, and added the accumulated time of the viewing time to last time to them in a predetermined storage parts store (a summing processing (I) step, S405).

[0059]When using the storage area (NVRAM) only for an entrepreneur as a storage parts store among the nonvolatile memory contained in IRD, it is good to memorize and employ the information which starts viewing time by following block assignment and block arrangement (refer to drawing 7).

[0060]0:representative nvram: [quota -nvram://broadcasrt_id/]/broadcasrt_id/1 which is - NVRAMblock: Nickname (1)

nvram://broadcasrt_id/2: Nickname (2)

nvram://broadcasrt_id/3: Nickname (3)

nvram://broadcasrt_id/4: Nickname (4)

arrangement quota -nvram: - within a block. //broadcasrt_id/N[1]:broadcasrt_id/N[capacity 12bytenvram/ which memorizes a membership number /:/] [2]: -- the capacity

14bytenvram://broadcasrt_id/N[3]:temporary member who memorizes nickname, and a television member. Capacity 1bytenvram://broadcasrt_id/N [4] which memorizes the classification of members, such as a net member, a portable member, and a platina member.: Memorize a member's date of birth (YYYYMMDD).

Capacity 8bytenvram://broadcasrt_id/N [5]: Memorize a member's sex (M: a male, F:woman).

capacity 1bytenvram://broadcasrt_id/N[6]:broadcasrt_id/N[capacity 4bytenvram/ which memorizes a point size /:/] [7]: -- the last update date of a point size is memorized (YYMMDD)

Capacity 6bytenvram://broadcasrt_id/N [8]: Memorize the family number of common NVRAM (1-8).

Capacity 1bytenvram://broadcasrt_id/N [9]: Memorize a withdrawal-from-the-membership flag (under 0:admission, 1: withdrawal from the membership).

□ of still the above [capacity of 1 byte] -- an inner number shall show the ordinal number of arrangement A savings point size means the point size which the user saved in the database 103 via the electronic network.

[0061](5) Add the point size equivalent to the time interval to which an event message holds the accumulation point size to last time in read-out from a predetermined storage parts store, and an accumulation point size, and write in the added point size in a predetermined storage parts store (a summing processing (II) step, S406).

[0062]It is desirable to provide the storage parts store which memorizes here the updated date of a point size other than the storage parts store which memorizes a point size, and to also memorize an updated date with renewal of a point size.

[0063](6) Acquire the event_id information which shows the contents of the program (an event_id acquisition step, S407). As a result of acquiring, when event_id information is the same as that of the last thing, to (an event message processing start step and S403) in not being the same, After adding the event_id information acquired to the predetermined storage area (S409), it shifts to

(an event message processing start step and S403), respectively.

[0064]So far, although stated focusing on the service to a televiewer, By enabling the digital broadcasting station 101 and the service provision server 106 to refer to the membership information in the database 101 via an electronic network, Since information, including a televiewer's viewing history (view log) etc., can be extracted, there is a big merit also in the side which provides service -- useful information is collectable to organization of a program -- for example. Since the televiewer can enjoy much more service if it is made to provide additional service of discount of paid broadcasting, etc. for a televiewer based on the extracted information, it becomes possible to spread digital broadcasting further.

[0065]To what is called information processors, such as a server used within the digital broadcasting system concerning the embodiment of this invention, and a computer system. It has a general view like composition of a general aviation, a workstation, PC, NC (Network Computer), etc. being included, for example, being shown in drawing 8, and it is assumed that it has the floppy (registered trademark) disk drive 82 and the optical disk drive 84. And by inserting the optical disc 86 to the floppy disk 83 and the optical disk drive 84 to the floppy disk drive 82, and performing predetermined read-out operation, The information stored in these recording media is installable in the computer system 80. It is also possible by connecting a predetermined drive device to perform installation and reading and writing of data using the cartridge 88 which plays ROM87 which plays a role of a storage device, and a role of a magnetic tape handler, for example. Information, including membership information etc., can be inputted via the keyboard 85, and the service etc. which are provided can also be outputted from the display 81.

[0066]The digital broadcasting method of this invention may be programmed and may be saved at the recording medium in which computer reading is possible. And by making this recording medium read into a computer system, storing a program in storage parts stores, such as a memory within a computer system, and executing a digital broadcasting program with an arithmetic unit, when performing digital broadcasting processing, The digital broadcasting method of this invention is realized and it also becomes possible to automate. Here, with a recording medium, a recording medium etc. which can record the program of semiconductor memory, a magnetic disk, an optical disc, a magneto-optical disc, magnetic tape, etc. and in which computer reading is possible are contained, for example.

[0067]<<Other embodiments>> In the above-mentioned embodiment, although it has composition which is a distribution side (broadcasting station) of program information, integrates the viewing time of a program and transmits to a receiving set, it does not matter at all even if it performs this addition processing by the receiving set side. Namely, transmit and the total contents which carry out the accumulation total of the viewing time of a program with program information with reference to the lapsed time from the reception time of program information as shown, for example in drawing 9 by the receiving set side. Only a predetermined number may be made to ***** the point size within a point storage means with a predetermined time interval using these total contents (description A in drawing 9).

[0068]The point size memorized in the point storage means is good to enable it to reset by processing by the side of a broadcasting station. The reset processing of this point size is realizable by starting a function as shown in drawing 10, and making it always operate at the time of the start-up of BML contents. According to this composition, it becomes possible to perform processing in which a point size is reset annually, for example.

[0069]Thus, including the various embodiment etc. which have not been indicated here should fully understand this invention. Therefore, this invention must be limited from this indication by only matter to define the invention concerning appropriate Claims.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a mimetic diagram showing the digital broadcasting system concerning the embodiment of this invention.

[Drawing 2]It is a flow chart figure showing the digital broadcasting method concerning the embodiment of this invention.

[Drawing 3]It is a flow chart figure showing the digital broadcasting method by the side of the broadcasting station concerning the embodiment of this invention.

[Drawing 4]It is a flow chart figure showing the digital broadcasting method of the receiver concerning the embodiment of this invention.

[Drawing 5]It is a mimetic diagram showing the television membership registration screen concerning the embodiment of this invention.

[Drawing 6]It is a mimetic diagram showing the net membership registration screen concerning the embodiment of this invention.

[Drawing 7]It is a block diagram showing the composition of the point storage means concerning the embodiment of this invention.

[Drawing 8]It is a mimetic diagram showing a general view of the information processor concerning the embodiment of this invention.

[Drawing 9]It is a figure showing the total contents concerning other embodiments of this invention.

[Drawing 10]It is a figure showing the point size reset processing contents concerning the embodiment of this invention.

[Description of Notations]

50 Television membership registration screen

51, 61 transmission buttons

60 Net membership registration screen

80 Computer system

81 Display

82 Floppy drive

83 Floppy disk

84 Optical disk drive

85 Keyboard

86 Optical disc

87 ROM

88 Cartridge

101 Digital broadcasting station (broadcast sending device)

102 Reception means (broadcast receiving set)

102a Detection/decoding means

102b Interpretation means

102c Total contents recording means

102d point storage means

102e Registration means

102 f Output means
103 Database
104 The server for television (TV) members
105 The server for net members
106 Service provision server
107 Computer system

[Translation done.]

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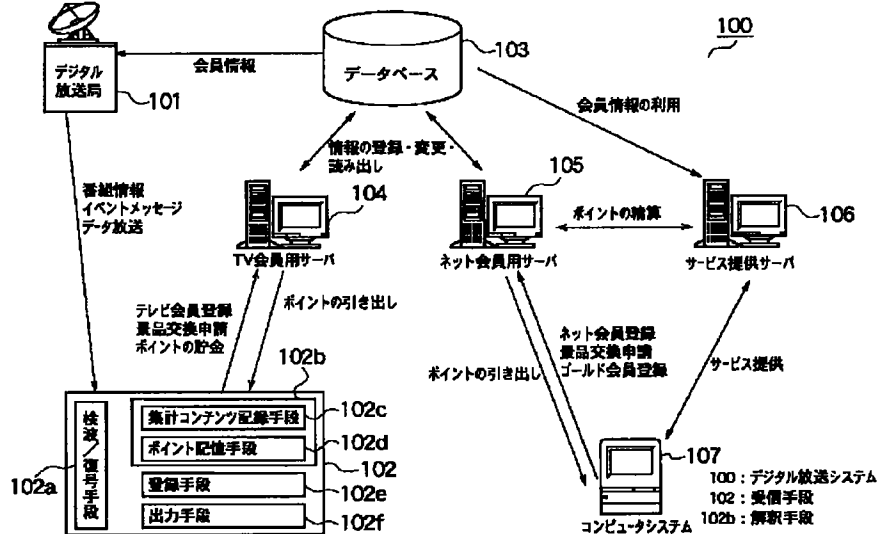
1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.*** shows the word which can not be translated.

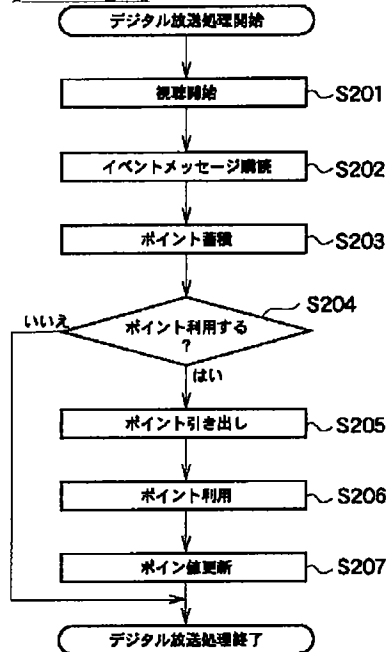
3.In the drawings, any words are not translated.

DRAWINGS

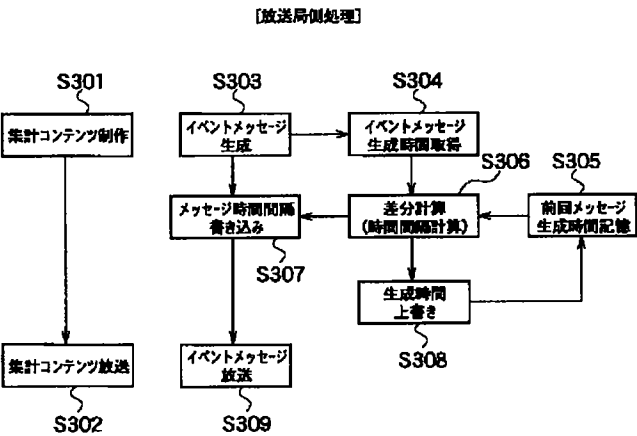
[Drawing 1]



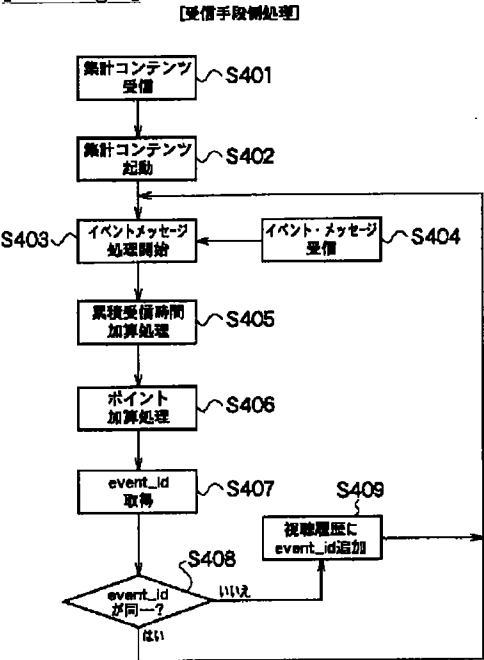
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Drawing 5]

テレビ会員登録画面

IRD.ID

家族番号

会員番号 - -

暗証番号

名前 姓 名

住所

現在のポイント数 ポイント

51 50

[Drawing 6]

ネット会員登録画面

会員番号

-

-

暗証番号

名前

姓

名

住所

ポイント数

ポイント

送信

リセット

61

60

[Drawing 7]

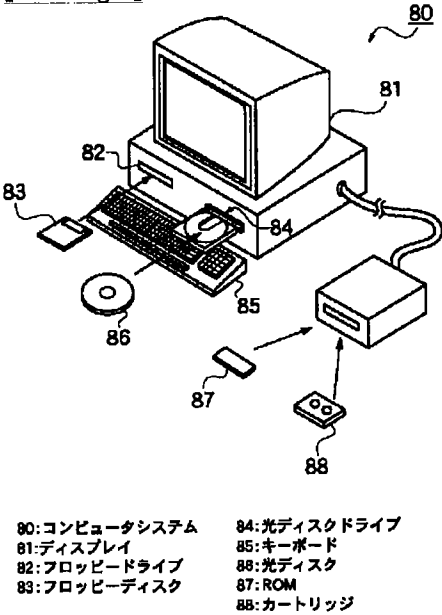
(a) ブロックの割当

| | | | | |
|-----|---------------|---------------|---------------|---------------|
| 代表者 | ニックネーム (1) | ニックネーム (2) | ニックネーム (3) | ニックネーム (4) |
|-----|---------------|---------------|---------------|---------------|

(b) 各ブロックの配列

| | | | | | | | | | | |
|------|----|--------|----|------|------|----|-------------|---------------|------------------|-----------|
| 会員番号 | | ニックネーム | | 会員種別 | 生年月日 | 性別 | 貯金 ポイント数 | ポイント 最終更新日 | 共通NVPAMS 家族番号 | 退会 フラグ |
| 0 | 12 | 26 | 27 | 35 | 36 | 40 | 46 | 47 | 48 | |

[Drawing 8]



[Drawing 9]

```

function HM-incVL()
{
    var Kai inNum;
    var i;
    var vbuffer;
    var nvramString;
    var dateObj;
    var dateStr;
    var getNV;
    var checkVL = 2000000000;
    var maxVL = 2147483647;

    getNV = new Array('14');

    nvramString = 'nvram://common/0';
    getNV = browser.readPersistentArray(nvramString, 'S:15B, U:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B');

    if(getNV==''){
        delete getNV;
        return 0;
    }
    KaiInNum = getNV[1];
    dateObj = new Date();
    for(i=1; i<=KaiInNum; i++){
        nvramString = 'nvram://common/'+i.toString();
        getNV = browser.readPersistentArray(nvramString, 'S:12B, S:14B, S:1B, S:8B, S:1B, U:4B, S:6B, S:1B');

        if(getNV==''){
            delete dateObj;
            delete getNV;
            return 0;
        }
        vbuffer = getNV[5];
        if(vbuffer==checkVL)
        {
            document.getElementById("VLCHECK").normalStyle.visibility = 'visible';
        }
        if(vbuffer<maxVL)
        {
            vbuffer = vbuffer+1;
            getNV[5] = vbuffer;
        }
        year = (dateObj.getFullYear()).toString();
        year = year.substring(year.length - 2, year.length);
        month = (dateObj.getMonth()).toString();
        if (month.length==1)
        month = '0'+month;
        day = (dateObj.getDay()).toString();
        if (day.length==1)
        day = '0'+day;
        getNV[6] = year + month + day;
        if (browser.writePersistentArray(nvramString, 'S:12B, S:14B, S:1B, S:8B, S:1B, U:4B, S:6B, S:1B', getNV)==
        0){
            delete dateObj;
            delete getNV;
            return 0;
        }
    }
}

```

[Drawing 10]

```

function HM_resetVL()
{
    var Kai inNum;
    var i;
    var getNV;
    var nvramString;
    var dateObj;
    var dateStr;
    var year;
    var month;
    var day;
    getNV = new Array('14');
    nvramString = "nvram:// /0";
    getNV = browser.readPersistentArray(nvramString,"S:15B, U:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B, S:1B");
    if(getNV==null)
    {
        delete getNV;
        return 0;
    }
    for(i=1; i<=Kai inNum;i++)
    {
        nvramString = "nvram:// /"+i.toString();
        getNV = browser.readPersistentArray(nvramString,"S:12B, S:14B, S:1B, S:8B, S:1B, U:4B, S:6B, S:1B");
        if(getNV==null)
        {
            delete getNV;
            return 0;
        }
        if(browser.setCurrentDateMode(0)==NaN)
        {
            delete getNV;
            return 0;
        }
        dateObj = new Date();
        year =(dateObj.getFullYear()).toString();
        year =year.substring(year.length - 2,year.length);
        month =(dateObj.getMonth()).toString();
        if(month.length==1)
            month = '0'+month;
        day =(dateObj.getDay()).toString();
        if(day.length==1)
            day = '0'+day;
        dateStr = year+month+day;
        if(getNV[6].toString().toNumber()<dateStr.toNumber())
        {
            getNV[5] = 0;
            getNV[6]=dateStr;
            if(browser.writePersistentArray(nvramString,"S:12B, S:14B, S:1B, S:8B, S:1B, U:4B, S:6B, S:1B", getNV)==
0){
                delete dateObj;
                delete getNV;
                return 0;
            }
        }
        delete dateObj;
    }
    delete getNV;
    return 1;
}

```

[Translation done.]